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EXAMINER

YANG, CLARA I

ART UNIT PAPER NUMBER

2635

DATE MAILED: 06/17/2004

16

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/483,167

Applicant(s)

BJORKLUND ET AL.

Examiner

Clara Yang

Art Unit

2635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35 and 36 is/are allowed.
- 6) ☒ Claim(s) 34,37-48,51-55 and 58 is/are rejected.
- 7) ☒ Claim(s) 49,50,56 and 57 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 10, filed on 1 June 2004, with respect to the rejection(s) of claim(s) 34, 37 - 43, and 45 - 48 under 35 U.S.C. §102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,275,166 (del Castillo et al.), which teaches a digital radio communication system having a host, a first-tier base station, and a plurality of second-tier base stations connected to remote appliances, wherein the host controls and monitors the appliances via the first-tier base station, a first second-tier base station, and a second second-tier base station. Per del Castillo, the host can control/monitor an appliance by using as many as eight second-tier base stations (see Col. 9, lines 2 - 11).

Allowable Subject Matter

2. Claims 35 and 36 are allowed. The prior art of record fails to teach or suggest a multi-tier digital radio system comprising a host, a first-tier base station coupled to the host, a first second-tier base station coupled to the first-tier base station, a second second-tier base station coupled to the first second-tier base station and a remote unit in order to enable the host to control the remote unit via the first-tier base station, the first second-tier base station, and the second second-tier base station, wherein the second second-tier base station goes into a sleep mode for a predetermined interval and transmits an notification indicative of the duration of the sleep interval to the remote unit.

Art Unit: 2635

3. Claims 49, 50, 56, and 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

4. Claims 53, 54, and 58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims call for a second second-tier base station that transmits a synchronization interval to the remote unit in response to receiving a message from the remote unit. However, on pages 2 - 3 in the amendment to the specification filed on 23 January 2004, the applicant only teaches that a station RADPAD (i.e., a remote unit) receives an associate command from a base (i.e., a second second-tier base station), waits for a synchronization signal or beacon from the base, and sends an associate request to the base upon receiving a beacon. In turn, the base sends an associate response to the station in order to acknowledge the station's associate request. In other words, the second second-tier base station sends a synchronization interval after sending an associate command instead of after receiving a message from the remote unit.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

Art Unit: 2635

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 34, 40, 42, and 45 - 48 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,275,166 (del Castillo et al.).

Referring to claims 34, 40, 42, and 47, del Castillo teaches a radio frequency (RF) appliance control and monitoring system. As shown in Fig. 1, del Castillo's system comprises: (a) headend control computer (HCC) 16 or a processor-based host adapted to control remote appliances/units such as heating, ventilation and air conditioning (HVAC) units 25, temperature sensors 26, motion detectors 27, door transducers 29, mini-bars 30, safes 31, and audio/video devices 32 (see Col. 4, lines 7 - 25 and 52 - 61; and Col. 5, lines 42 - 50); (b) a headend transceiver unit (HTU) 18 or first-tier base station communicatively coupled to HCC 16 via an RS-232 interface, wherein HCC 16 and HTU 18 exchange RS-232 serial ACSII data streams and HTU 18 operates in accordance with a first communications protocol (see Col. 4, lines 7 - 11, 26 - 31); and (c) a plurality of appliance management stations (AMSs) 12 or second-tier base stations that are wirelessly coupled to HTU 18 and are coupled to appliances 24 (see Fig. 3; Col. 4, lines 7 - 11 and 25 - 51). Per del Castillo, at least some AMSs 12 are used to control appliances and function as relay units (see Col. 4, lines 62 - 67 and Col. 5, lines 1 - 12). According to del Castillo, all AMSs 12 that communicate directly with HTU 18 are level 1 AMSs 12 (i.e., first second-tier base stations), and all AMSs 12 that communicate with HTU 18 via the level 1 AMSs 12 are level 2 AMSs 12 (i.e., second second-tier base stations), wherein the first and second second-tier AMSs 12 communicate without an intervening HTU 18 (see Col. 7, lines 56 -

Art Unit: 2635

67; Col. 8, lines 1 - 18 and 53 - 67; and Col. 9, lines 1 - 8). Del Castillo discloses that HTU 18 and all AMSs 12 communicate frequency shift key shift keying (FSK) RF modem signals (see Col. 4, lines 26 - 28), i.e., a different communications protocol from the first communications protocol.

Consequently, HCC 16 transmits a control signal to remote appliance 24 via HTU 18, a first second-tier AMS 12, and a second second-tier AMS 12, wherein the second second-tier AMS 12 receives the control signal from the first second-tier AMS 12 and feeds the control signal to the designated appliance (see Fig. 6, appliance 24 as indicated by the letter "A" in the box with the dashed outline; Col. 5, lines 4 - 10; Col. 7, lines 56 - 67; and Col. 8, lines 1 - 18).

Regarding claims 45 and 48, as shown in Fig. 6, del Castillo's HCC 16 is also able to control an appliance 24 (indicated by the letter "A" in the box with the solid outline) via HTU 18 (a first-tier base station), AMS R1 (a first second-tier base station), AMS R2 (a third second-tier base station), and AMS D (a second second-tier base station).

Regarding claim 46, in Fig. 6, del Castillo's example teaches HTU 18 communicating with AMS D via AMS R1 and AMS R2. When AMS D sends an acknowledgement Ak to HTU 18, the acknowledgement is sent to HTU 18 via AMS R2 and AMS R1 (see Col. 8, lines 4 - 11). Because del Castillo teaches that HCC 16 communicates with level 2 AMSs 12 (i.e., second second-tier base stations) via level 1 AMSs 12 (i.e., first second-tier base stations), it is understood that a level 2 AMS 12 communicates an acknowledgement Ak signal to HTU 18 via a level 1 AMS 12 (see Col. 8, lines 64 - 67 and Col. 9, lines 1 - 8).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2635

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the
claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various
claims was commonly owned at the time any inventions covered therein were made absent any
evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out
the inventor and invention dates of each claim that was not commonly owned at the time a later
invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)
and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 34, 37 - 43, 45 - 48, 51 - 55, and 58 are rejected under 35 U.S.C. 103(a) as being
unpatentable over U.S. Patent No. 5,790,536 (Mahany et al.) in view of U.S. Patent No. 6,275,166
(del Castillo et al.).

Referring to Claims 34, 42, 46, 47, and 55, Mahany teaches a multi-tier system, as shown
in Figs. 28A - 28C, comprising: (a) host 3011 adapted to control a remote unit, such as printer
3013 or code reader 3009, through a control signal (see Col. 43, lines 27 - 31); (b) access points
3015 and 3017 or first-tier base stations for providing access to a hard-wired backbone LAN
3019 and for receiving a control signal from host 3011 (see Col. 43, lines 62 - 67); (c) access point
3021, which is adapted to receive the control signal from access points 3015 and 3017 via
frequency hopping and is understood to be a first second-tier base station because it
communicates with the first-tier base stations and with peripheral LAN devices or second
second-tier base stations (see Col. 37, lines 7 - 13; Col. 40, lines 32 - 35, 44 - 48, and 61 - 65; Col.
44, lines 55 - 63; Col. 45, lines 2 - 8 and 17 - 24; and Col. 46, lines 1 - 7); and (d) a plurality of

Art Unit: 2635

second second-tier base stations, such as computer terminal 3007 and storage terminal 3031, that communicate with remote devices (e.g., printer 3013) and first second-tier base stations using a narrowband, single frequency protocol and have a short transmission range relative to that of access points 3015 and 3017 (see Col. 37, lines 14 - 23; Col. 40, lines 66 -67; Col. 41, lines 1 - 4; Col. 44, lines 13 - 15, 26 - 31, and 49 - 54; Col. 45, lines 50 - 54; and Col. 46, lines 11 - 14). Mahany, however, fails to expressly teach host 3011 controlling a remote unit through the first and second second-tier base stations.

In an analogous art, as explained above in Section 7, del Castillo teaches a host unit (HCC 16) adapted to control the remote unit (appliances 24) through the first-tier base station (HTU 18), which operates according to a first communications protocol (RS-232 serial ASCII data stream), a first second-tier AMS 12 (or level 1 AMS 12), and a second second-tier AMS 12 (or level 2 AMS 12), wherein the first and second second-tier AMSs 12 communicate with each other without an intervening HTU 18 and use a second communications protocol (FKS RF modem signals).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Mahany as taught by del Castillo because a host that controls a remote unit through a first-tier base station, a first second-tier base station, and a second second-tier base station is able to control remote appliances that are beyond the host's communications range while maintaining limited transmission power and distance to avoid governmental site licensing (see del Castillo, Col. 4, lines 62 - 67; Col. 5, lines 1 - 4; and Col. 8, lines 25 - 27).

Regarding claim 37, because Mahany discloses that when a plurality of second-tier base stations communicate with each other or with other remote units, either one second-tier base

Art Unit: 2635

station becomes a dedicated "control point" or the control point function is distributed among some or all of the devices (see Col. 38, lines 33 - 43), it is understood that a second second-tier base station functions as a control point. Per Mahany, a control point performs the following tasks: (a) buffering data intended for a remote unit if the remote unit is asleep (see Col. 17, lines 34 - 39 and Col. 18, lines 43 - 46); and (b) indicating or announcing the presence of buffered data to the remote unit at regular, predetermined intervals until the remote unit retrieves the buffered data from the control point (see Col. 31, lines 14 - 18; Col. 35, lines 45 - 53; and Col. 41, lines 15 - 28). Mahany teaches that a control point periodically transmits a Request for Poll (RFP), which informs the remote units that there are messages for them in the queue (see Col. 17, lines 28 - 39). When sleeping remote units receive their address in the RFP, the remote units transmit a poll in order to receive the buffered message from the control point (see Figs. 7b, 20a and 20b; and Col. 19, lines 50 - 65). In other words, the second second-tier base station (c) receives a remote unit's poll or request and (d) provides the buffered data to the remote unit in response to receiving the request. Mahany adds that power managed remote devices employ sleep algorithms synchronized to wake for the minimum period necessary to guarantee receipt of pending message transmission (see Col. 31, lines 14 - 18).

Regarding claims 38 and 39, Mahany imparts that peripheral or terminal devices include a data collection device that is a bar code reader 3009 (see Fig. 28a; Col. 10, lines 34 - 36; and Col. 43, lines 19 - 25).

Regarding claims 40 and 41, Mahany's peripheral or terminal devices (i.e., "remote units") comprise a printer 3013 (see Fig. 28a; Col. 10, lines 31 - 36; and Col. 43, lines 27 - 31), a hand-held computer terminal 3007 (see Fig. 28a; Col. 9, lines 27 - 29; and Col. 43, lines 22 - 25),

Art Unit: 2635

or a radio terminal (see Col. 63, line 31), which is understood that the radio terminal can be a pager.

Regarding claim 43, Mahany shows in Fig. 1c that host computer 55 and first-tier base stations 56, 57, 58, and 59 form a premises local area network (LAN) (see Col. 11, lines 39 - 44). Mahany further teaches that first-tier base stations, such as first-tier base station 59, can be wirelessly connected to the LAN (see Col. 11, lines 45 - 49). Furthermore, in Fig. 28a, Mahany imparts that hard-wired backbone LAN 3019 and access point 3015 and 3017 form a premises LAN (see Col. 43, lines 62 - 64).

Regarding claims 45 and 48, Mahany discloses that in an alternate configuration, a second-tier access point 3021 is connected indirectly to backbone LAN 3019 via first-tier access points 3015 and 3017 (see Col. 45, lines 17 - 21). Per Mahany, access point 3021 is also able to communicate with other peripheral LAN devices, such as computer terminal 3007, printer 3013, modem 3023, code reader 3009, and storage terminal 3031 (see Col. 44, lines 32 - 63 and Col. 45, lines 21 - 24). In the embodiment with access point 3021, it is understood that access point 3021 is a first second-tier base station, that computer terminal 3007 is a second second-tier base station, and that storage terminal 3031 is a third second-tier base station and is in communication with printer 3013 (see Col. 46, lines 11- 14). Mahany, however, is silent on host 3011 controlling a remote unit through the first, second, and third second-tier base stations.

As shown in Fig. 6, del Castillo's HCC 16 is able to control an appliance 24 (indicated by the letter "A" in the box with the solid outline) via HTU 18 (a first-tier base station), AMS R1 (a first second-tier base station), AMS R2 (a third second-tier base station), and AMS D (a second second-tier base station).

Art Unit: 2635

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Mahany as taught by del Castillo because a host that controls a remote unit through a first-tier base station, a first second-tier base station, a second second-tier base station, and a third second-tier base station is able to control remote appliances that are beyond the host's communications range while maintaining limited transmission power and distance to avoid governmental site licensing (see del Castillo, Col. 4, lines 62 - 67; Col. 5, lines 1 - 4; and Col. 8, lines 25 - 27).

Regarding claims 51 and 52, Mahany teaches all the limitations as explained above in claims 34, 47, and 55.

Regarding claims 53, 54, and 58, Mahany teaches a binding or associating process between a control point (i.e., a second second-tier base station as explained above in claim 37) and remote units. Per Mahany, a control point begins the process by (a) transmitting a request (i.e., "associate command") to form a spontaneous LAN with a specific remote unit or with a specific type of remote unit (see Col. 37, lines 40 - 50). If a compatible remote unit is within range, the remote unit responds to the request, causing the binding process to begin once the control point (b) receives the remote unit's response (see Col. 37, lines 50 - 60). During the binding process, the control device (c) transmits access intervals of known duration on a series of four frequencies spread throughout the available frequency range (see Col. 41, lines 45 - 50). The access interval includes a synchronization (SYNC) message (see Col. 37, lines 27 - 31). Once a control point and a remote unit are able to establish communication, the remote unit registers with the control point (see Col. 41, lines 59 - 62). During registration, the remote unit communicates a message containing an alias/identifier that identifies the remote unit, and the control unit assigns a local address to the remote unit (see Col. 39, lines 21 - 24).

Art Unit: 2635

10. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,790,536 (Mahany et al.) in view of U.S. Patent No. 6,275,166 (del Castillo et al.) as applied to claim 34 above, and further in view of U.S. Patent No. 5,673,252 (Johnson et al.).

Mahany and del Castillo teach connecting a first-tier base station and the host through as RS-232 port but are silent on connecting a first second-tier base station to a first-tier base station through a serial port.

In an analogous art, Johnson's multi-tier communication system includes: (a) a first-tier base station, or intermediate data terminal (IDT), that has a first radio transceiver operating in accordance with a first communication protocol and is connected to a local area network (LAN) (see Fig. 1, IDT 114; and Col. 22, lines 41 - 45 and 56 - 57); (b) a second-tier base station, or remote cell node (RCN), that comprises a second radio transceiver operating in accordance with a second communication protocol independent of the first communication protocol and is connected to the first-tier base station (see Fig. 1, RCN 112; Col. 11, lines 46 - 49; and Col. 18, lines 17 - 20); (c) a first-tier remote unit wirelessly connected to the first-tier base station (IDT) through the first radio transceiver (see Fig. 1, special and Col. 6, lines 23 - 28); and (d) a second-tier remote unit, or network service module (NSM), wirelessly connected to the second-tier base station (RCN) through the second radio transceiver (see Col. 5, lines 47 - 52). Because Johnson's multi-tier system for digital radio packet communication is a wide area communications network, it is understood that the central data terminal (CDT) is connected to a wide area network (WAN) and that the IDTs are connected to a LAN. Johnson's second-tier remote unit (or NSM) comprises a vending machine (see Col. 10, lines 6 - 9). Because Johnson imparts that the IDT and RCN can be connected via cable (see Col. 18, lines 65 - 67), it is understood that the RCN is connected to the IDT through a serial port.

Art Unit: 2635

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Mahany's multi-tier system as taught by Johnson because connecting the first-tier and second-tier base station through a serial port eliminates transmission errors caused by radio frequency (RF) interference, thereby improving system reliability.


30

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clara Yang whose telephone number is (703) 305-4086. The examiner can normally be reached on 8:30 AM - 7:00 PM, Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached on (703) 305-4704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CY
9 June 2004


BRIAN ZIMMERMAN
PRIMARY EXAMINER